

**FACILITATOR'S GUIDE FOR A
CASE STUDY ON MUNICIPAL
FINANCIAL PLANNING FOR A
MAJOR CAPITAL PROJECT**

Prepared for

Prepared by

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FACILITATOR'S GUIDE FOR A CASE STUDY ON MUNICIPAL FINANCIAL PLANNING FOR A MAJOR CAPITAL PROJECT

CASE STUDY OBJECTIVES

Small groups of participants will use City F as a case study for analysis and discussion of the financial planning for a major capital project. These teaching notes serve only as a guide for the discussions. The participants are asked to assume the role of financial advisors hired to provide assistance to City F in the development of a viable financing plan.

At the outset, the seminar leader may find it appropriate to provide 30-45 minutes for the participants to simply read through the materials. The objectives of the small group discussions are to:

- ! Develop a thorough analysis of the credit strengths and weaknesses of City F
- ! Determine, on the basis of the available information, whether City F has prepared a financial plan that can support the request for a bank loan
- ! Generally review other aspects of a major capital project that have financial implications, (such factors as construction period/completion risks; long-term contractual obligations to stabilize operating costs and revenues; competitive factors relating to substitute fuel sources and demand conditions)

There are two broad areas for discussion:

- ! Has the city demonstrated the financial capacity, as measured by past and projected financial data, to meet future the debt service obligations for the heating plant project?
- ! Has the city assessed the operational risks of the project? Has the city accounted for potential risks of not completing the project on time and within budget? Has the city attempted to minimize the risks of volatile operating costs and revenues from the heating plant?

DISCUSSION OF PAST AND PRESENT FINANCIAL INFORMATION

As a general strategy, I recommend first discussing the past and present financial information in Exhibits 1 and 5 and Worksheets 1 and 2. Following that,

I would discuss the proposed borrowing and the projected financial statements (Exhibits 3, 4 and Worksheet 3). Finally, I would discuss the narrative and Exhibit 2.



Exhibit 1
Financial Information for City F
(All amounts in Kc 000's)

	Actual 1996	Actual 1997	Actual 1998	Budget 1999
Revenues				
Total Tax Revenues	43,142	51,333	50,277	52,430
Physical entities income taxes from dependent	8,214	7,457	8,146	9,530
Physical entities income taxes from independent	20,445	19,869	12,079	13,000
Legal entities income tax	3,432	8,426	9,824	10,300
Legal entities income tax from municipalities	6,101	10,698	13,595	13,600
Property taxes	2,484	2,238	3,498	3,400
Administrative and court fees	2,169	2,214	2,048	2,100
Other tax revenues	297	431	1,087	500
Total Non-Tax Revenues	32,942	22,603	18,188	14,929
Revenues from BO, CO	6,260	1,664	7,538	7,300
Revenues from non-investment property sales	326	529	236	—
Revenues from property lease	168	154	129	129
Loan instalments	1,025	1,329	1,827	1,500
Other non-tax revenues	25,163	18,927	8,458	6,000
State Subsidies	30,068	73,088	30,856	26,000
Total General Subsidies	12,317	8,970	9,834	11,000
Extraordinary and special purpose subsidies	17,751	64,118	21,022	15,000
Capital Revenues	—	17,918	14,894	30,000
Revenues from investment property sales	—	15,740	11,257	20,000
Other Capital Revenues	—	2,178	3,637	10,000
Total Revenues	106,152	164,942	114,215	123,359
Expenditures				
Operating Expenditures (excluding payments of	42,347	53,950	66,761	70,306
Salaries and other personnel expenses	8,262	8,818	8,114	9,006
Operating Subsidies to CO and other firms	7,369	5,274	6,259	6,300
Operating Loans	—	—	—	—
Other Expenditures	26,716	39,858	52,388	55,000
Investment Expenditures	62,977	118,191	55,560	49,000
Investment Subsidies to CO and other firms	250	—	—	—
Investment Loans	—	1,973	—	—
Investment Expenditures	62,727	116,218	55,560	49,000
Total Expenditures	105,324	172,141	122,321	119,306
Total Expenditures (including payments of interest)	106,478	172,681	122,861	119,486
Economic Results				
Total Revenues	106,152	164,942	114,215	123,359

	Actual 1996	Actual 1997	Actual 1998	Budget 1999
Total Expenditures	106,478	172,681	122,861	119,486
Surplus (Deficit)	-326	-7,739	-8,646	3,873
Financing				
Changes on bank accounts (+, -)	4,326	1,739	12,646	-1,873
Principle payments (-)	-4,000	—	-4,000	-2,000
Revenues from loans (+)	—	6,000	—	—
Financing	326	7,739	8,646	-3,873
Debt Service				
Interest	1,154	540	540	180
Principle	4,000	—	4,000	2,000
Total Debt Service	5,154	540	4,540	2,180

Exhibit 1 can be used to discuss some recent overall trends in financial results for City F. First, it is worth noting that total revenues have been very volatile, rising by nearly Kc 60 million in 1997, falling Kc 50 million in 1998, and projected to rise by Kc 9 million in 1999. *It is important to note that Exhibit 1 does not include the proposed project in either revenues or expenditures. Exhibit 5 includes this information.*

Contributing to the volatility of revenues has been the volatility of total tax revenues—which jumped by +19 percent in 1997, fell by 2 percent in 1998, and projected to jump by 4.3 percent in 1999. It is also worth noting that total non-tax revenues have declined each year. The 1999 budget amount is less than half the amount in 1996. Another very volatile revenue source has been extraordinary subsidies, which we presume are related to other capital projects. *(Since one of the objectives of the case discussion is to develop a list of questions for City F, one question here might be related to the status of these other projects—were they completed on time and within budget and are they operating satisfactorily?)*

On the expenditure side of the budget, it is very noteworthy that the same pattern of volatility is evident—total spending went up 62 percent in 1997, fell 29 percent in 1998, and is budgeted to decline (without the project) by 3 percent in 1999. What is interesting to note is that this volatility in spending is mainly due to the volatility of investment spending—which makes the point that capital projects tend to be “lumpy”, that is, requiring large outlays in a short period to complete projects. At the same time, we must note that operating expenditures have continued to increase, even as revenues were declining. *(As another issue for City F, the groups may wish to explore the questions of budget controls and suggest*



steps to mandate spending cuts when revenue shortfalls appear).

It can also be noted that City F incurred deficits in 1996, 1997 and 1998. Moreover, the pattern of deficits was increasing over this time, from Kc 326,000, or 0.3 percent of expenditures including debt service, to 4.5 percent of total spending in 1997 and 7 percent of expenditures in 1998. As a result, City F has financed these deficits by drawing down cash reserves and borrowing, including a Kc 6 million loan in 1997. This loan is scheduled to be repaid in 1999. Overall, this 3-4 year snapshot of City F suggests that the city has had some difficulties in holding down the growth in operating expenditures in the face of declining tax revenues, but it has also carried out an ambitious capital spending program largely financed by its own revenues and by central government subsidies. This may provide an occasion to discuss the issues of pay-as-you-go for capital projects versus long-term borrowing. Pay-as-you-go financing has the advantages of reducing the strain on future budgets for interest and principal payments; it also preserves borrowing capacity for future years, and it may enhance the perception of the city's credit quality. However, pay-as-you-go financing discourages intergenerational equity, and it may not provide sufficient funds for needed capital projects, which tend to be 'lumpy'. Postponing needed capital facilities may actually increase future costs. While long-term borrowing does provide that the users or beneficiaries of a project pay for it over time, i.e., intergenerational equity—borrowing also limits future financial flexibility by adding a fixed debt service payment over the life of the debt.

Exhibit 5
Financial Information for City F
Including Sources and Uses of Funds for Heating Project
(all amounts in Kc 000's)

	Actual 1996	Actual 1997	Actual 1998	Budget 1999
Revenues				
Total Tax Revenues	43,142	51,333	50,277	52,430
Physical entities income taxes from dependent	8,214	7,457	8,146	9,530
Physical entities income taxes from independent	20,445	19,869	12,079	13,000
Legal entities income tax	3,432	8,426	9,824	10,300
Legal entities income tax from municipalities	6,101	10,698	13,595	13,600
Property taxes	2,484	2,238	3,498	3,400
Administrative and court fees	2,169	2,214	2,048	2,100
Other tax revenues	297	431	1,087	500
Total Non-Tax Revenues	32,942	22,603	18,188	14,929
Revenues from BO, CO	6,260	1,664	7,538	7,300
Revenues from non-investment property sales	326	529	236	—
Revenues from property lease	168	154	129	129
Loan instalments	1,025	1,329	1,827	1,500

	Actual 1996	Actual 1997	Actual 1998	Budget 1999
Other non-tax revenues	25,163	18,927	8,458	6,000
State Subsidies	30,068	73,088	30,856	53,000
Total General Subsidies	12,317	8,970	9,834	11,000
Extraordinary and special purpose subsidies	17,751	64,118	21,022	42,000
Capital Revenues	—	17,918	14,894	30,000
Revenues from investment property sales	—	15,740	11,257	20,000
Other Capital Revenues	—	2,178	3,637	10,000
Total Revenues	106,152	164,942	114,215	150,359

Expenditures

Operating Expenditures (excluding payments of	42,347	53,950	66,761	70,306
Salaries and other personnel expenses	8,262	8,818	8,114	9,006
Operating Subsidies to CO and other firms	7,369	5,274	6,259	6,300
Operating Loans	—	—	—	—
Other Expenditures	26,716	39,858	52,388	55,000
Investment Expenditures	62,977	118,191	55,560	139,000
Investment Subsidies to CO and other firms	250	—	—	—
Investment Loans	—	1,973	—	—
Investment Expenditures	62,727	116,218	55,560	139,000
Total Expenditures	105,324	172,141	122,321	209,306
Total Expenditures (including payments of interest)	106,478	172,681	122,861	212,051

Economic Results

Total Revenues	106,152	164,942	114,215	150,359
Total Expenditures	106,478	172,681	122,861	212,051
Surplus (Deficit)	-326	-7,739	-8,646	-61,692

Financing

Changes on bank accounts (+, -)	4,326	1,739	12,646	692
Principal payments (-)	-4,000	—	-4,000	-2,000
Revenues from loans (+)	—	6,000	—	63,000
Financing	326	7,739	8,646	61,692

Debt Service

Interest	1,154	540	540	2,745
Principal	4,000	—	4,000	2,000
Total Debt Service	5,154	540	4,540	4,745



As a suggestion, a discussion of Exhibits 2 through 4 can be postponed until there has been a discussion of Exhibit 5 and Worksheets 1 and 2. There is not a great deal to discuss in Exhibit 5, since it provides only an updated 1999 budget that includes the heating plant project and its financing. On the revenue side, the big change is in extraordinary and special subsidies, which increase by Kc 27 million to reflect the SEF grant. On the expenditure side, investment expenditures increase to Kc 139 million, reflecting the Kc 90 million cost of the project. The deficit, nearly Kc 62 million is to be financed by the SEF loan and the MUFIS loan. It is worth noting that this project is several degrees larger in scope than any previous projects—especially in the added debt burden that the city will face.

City F

Worksheet #1

Separating Recurring Revenue from Non-Recurring Revenue

(All amounts in Kc 000's)

	Actual 1996	Actual 1997	Actual 1998	Budget 1999 (After New Credits)
RECURRING REVENUES				
National Tax Revenues				
Physical entities income taxes from dependent activity	8,214	7,457	8,146	9,530
Physical entities income taxes from independent activity	20,445	19,869	12,079	13,000
Legal entities income tax	3,432	8,426	9,824	10,300
Legal entities income tax from municipalities	6,101	10,698	13,595	13,600
<i>Total National Tax Revenues</i>	38,192	46,450	43,644	46,430
State Operating Subsidies				
Total General Subsidies	12,317	8,970	9,834	11,000
Local Revenues				
Revenues from RO, PO	6,260	1,664	7,538	7,300
Property Tax	2,484	2,238	3,498	3,400
Administrative Fees	2,169	2,214	2,048	2,100
Revenues from property lease	168	154	129	129
<i>Total Local Revenues</i>	11,081	6,270	13,213	12,929
<i>Total Recurring Revenues</i>	61,590	61,690	66,691	70,359
NON-RECURRING REVENUES				
Revenues from property sales	326	16,269	11,493	20,000
Other and Random Revenues	26,485	22,865	15,009	18,000

	Actual 1996	Actual 1997	Actual 1998	Budget 1999 (After New Credits)
Extraordinary and special purpose subsidies	17,751	64,118	21,022	42,000
<i>Total Non-Recurring Revenue</i>	44,562	103,252	47,524	80,000
TOTAL REVENUE	106,152	164,942	114,215	150,359

Worksheet #1 repackages revenues into recurring revenues and non-recurring revenues as the first step in estimating debt capacity. Focusing first on recurring revenues, it can be noted that total recurring revenues have increased each year, albeit in very small increments. From virtually no increase in 1997, recurring revenues increased 8.1 percent in 1998 and are projected to climb by 5.5 percent in 1999. Looking at the period prior to 1999 budget, it can be noted that personal income taxes (physical entities) fell by 9 percent in 1997, and climbed by 9 percent in 1998. Taxes from self-employed business persons (physical entities income taxes from independent activity) have fallen sharply from 20.4 Kc millions in 1996 to 13.6KC millions in 1998. The corporate income tax nearly tripled from 1996 to 1998. These numbers can be highlighted to have the groups discuss the role of changes in central government policy on local revenues, especially on the volatility of a major source of local government revenues. Among other consequences, this volatility makes long-term projections subject to some uncertainty. Further, this uncertainty must be accounted for in planning new, fixed, expenditures for debt service. (In general, this type of uncertainty reduces local government debt capacity.) As another measure of the sensitivity of City F finances to central government policy, it can be noted that two thirds of recurring revenues come from national tax revenues.

Further discussion of recurring revenues can point out that local revenues are also changeable, falling by 5 Kc millions in 1997, and then rising by 7 Kc millions in 1998. Most of the volatility here comes from revenues from budgetary and contributory organizations- where revenue dropped by 4.5 Kc millions in 1997 and rose by nearly 6 Kc millions in 1998. This can be used to provoke a discussion of the controls (if any) that municipalities have over the revenues and expenditures of these entities.

Finally, there can be a discussion of non-recurring revenues. First, it can be noted that non-recurring revenues in general account for a high proportion of total revenues, ranging from 42 percent in 1996 and 1998, to 63 percent in 1997 and 53 percent in 1998 (after the new project). Much of the non-recurring revenue appears to be associated with extraordinary subsidies and therefore



may also be associated with investment projects. However, in 1997, 1998 and proposed in 1999, there are also significant revenues planned from property sales. The one-shot nature of these revenues again adds to the uncertainty over the level and stability of future revenues for City F.

City F

Worksheet #2

The Concept of Net Operating Surplus (Deficit)

And The Debt Service Coverage Ratio (All amounts in Kc 000's)

	Actual 1996	Actual 1997	Actual 1998	Budget 1999 (After New Credit)
Recurring Revenues				
Total National Tax Revenues	38,192	46,450	43,644	46,430
Total General Subsidies	12,317	8,970	9,834	11,000
Total Local Revenues	11,081	6,270	13,213	12,929
Total Recurring Revenues	61,590	61,690	66,691	70,359
Less				
Operating Expenditures	42,347	53,950	66,761	70,306
Equals				
Net Operating Surplus (Deficit)	19,243	7,740	-70	53
Debt Service Coverage Ratio				
Net Operating Surplus	19,243	7,740	-70	53
Debt Service	5,154	540	4,540	4,745
Coverage Ratio	4	14	N/R	—

This is an important worksheet in analyzing the past performance of City F, and in understanding the challenges the city faces in meeting its new debt service obligations. First, it must be noted that City F has recorded a sharp decline in net operating surplus, going from 19.2 Kc millions in 1996 to a deficit of 70,000 Kc in 1998. In 1999, a negligible surplus of 53,000 Kc is projected. The reasons for this very negative trend in net operating surplus are the slow growth in recurring revenues and the much faster growth in operating expenditures. The latter grew by 27 percent in 1997 and 24 percent in 1998, and are projected to grow at 5.3 percent in 1999. The debt service coverage ratio was favorable in 1996 and 1997, but in 1998 the city was forced to rely on non-recurring revenues in order to meet its debt service obligations. And, as the worksheet shows, meeting projected 1999 debt service (which includes interest on the MUFIS loan for the project) again will require City F to rely on non-

recurring revenues. These results indicate that City F has some major hurdles to overcome when we turn to consider the pro-forma budget numbers and the new debt service.



DISCUSSION OF PROPOSED FINANCING AND FUTURE DEBT SERVICE COVERAGE

The discussion can then turn to an analysis of the proposed financing. Exhibit 3 describes the terms of the SEF loan and the proposed MUFIS loan. Exhibit 4 provides a schedule of annual debt service for each loan and for the

combined loans for the heating project. Overall debt service increases from 1999 to 2002 when the first principal payment is due on the SEF loan. Overall debt service then falls each year through the final maturity in 2009. Of particular note, debt service will rapidly increase from 2.6 Kc millions in 1999 to 8.7 Kc millions in 2000, and to 11.2 Kc millions in 2002. Participants may have comments on this pattern of level principal payments. Later on, we should discuss the concept of level annual debt service as perhaps a more suitable schedule for budgeting purposes.



Exhibit 4
City F Schedule of Debt Service Payments For Proposed Financing Municipal Heating Plant Project
(All amounts in Kc 000's)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
SEF Loan											
Principal Outstanding	27,000	27,000	27,000	27,000	23,625	20,250	16,875	13,500	10,125	6,750	3,375
Interest Expense	405	810	810	810	709	608	506	405	304	203	101
Principal Amortization		—	—	3,375	3,375	3,375	3,375	3,375	3,375	3,375	3,375
Total SEF Debt Service	405	810	810	4,185	4,084	3,983	3,881	3,780	3,679	3,578	3,476
MUFIS Loan											
Principal Outstanding	36,000	36,000	32,400	28,800	25,200	21,600	18,000	14,400	10,800	7,200	3,600
Interest Expense	2,160	4,320	3,888	3,456	3,024	2,592	2,160	1,728	1,296	864	432
Principal Amortization		3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Total MUFIS Debt Service	2,160	7,920	7,488	7,056	6,624	6,192	5,760	5,328	4,896	4,464	4,032
Total Debt Service											
Principal Outstanding	63,000	63,000	59,400	55,800	48,825	41,850	34,875	27,900	20,925	13,950	6,975
Interest Expense	2,565	5,130	4,698	4,266	3,733	3,200	2,666	2,133	1,600	1,067	533
Principal Amortization	—	3,600	3,600	6,975	6,975	6,975	6,975	6,975	6,975	6,975	6,975
Total Debt Service	2,565	8,730	8,298	11,241	10,708	10,175	9,641	9,108	8,575	8,042	7,508



Worksheet #3
Pro-Forma Projections of Net Operating Surplus (Deficit) and Debt Service Coverage
City F Heating Plant Project
(All Data in Kc 000's)

Line No.	1998 Actual	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1	66,691	70,359	79,478	81,817	84,303	86,946	89,755	92,743	95,919	99,298	102,892	106,715
2	8,146	9,530	10,197	10,911	11,675	12,492	13,366	14,302	15,303	16,374	17,521	18,747
3	12,079	13,000	13,910	14,884	15,926	17,040	18,233	19,509	20,875	22,336	23,900	25,573
4	9,824	10,300	10,815	11,356	11,924	12,520	13,146	13,803	14,493	15,218	15,979	16,778
5	13,595	13,600	13,600	13,600	13,600	13,600	13,600	13,600	13,600	13,600	13,600	13,600
6	43,644	46,430	48,522	50,750	53,124	55,652	58,345	61,214	64,271	67,529	70,999	74,698
7	9,834	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
8	7,538	7,300	7,410	7,521	7,633	7,748	7,864	7,982	8,102	8,223	8,347	8,472
9	3,498	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400
10	2,048	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100
11	129	129	7,046	7,046	7,046	7,046	7,046	7,046	7,046	7,046	7,046	7,046
12	13,213	12,929	19,956	20,067	20,179	20,294	20,410	20,528	20,648	20,769	20,893	21,018
13	66,761	70,306	71,275	72,267	73,283	74,322	75,386	76,474	77,587	78,725	79,890	81,081
14	8,114	9,006	9,276	9,554	9,841	10,136	10,440	10,754	11,076	11,409	11,751	12,103
15	6,259	6,300	6,174	6,051	5,930	5,811	5,695	5,581	5,469	5,360	5,253	5,148
16	52,388	55,000	55,825	56,662	57,512	58,375	59,251	60,139	61,041	61,957	62,886	63,830
17	-70	53	8,202	9,550	11,020	12,624	14,370	16,269	18,332	20,572	23,002	25,635
18	4,540	4,745	8,730	8,298	11,241	10,708	10,175	9,641	9,108	8,575	8,042	7,508
19	N/R	0.01	0.94	1.15	0.98	1.18	1.41	1.69	2.01	2.40	2.86	3.41

Assumptions:

- Line 2: Increases at 17 percent for 1999, 7 percent per annum thereafter
- Line 3: Increases at 8 percent in 1999, 7 percent thereafter
- Line 4: Increases at 5 percent in 1999 and thereafter
- Line 5: No change forecast
- Line 7: Increase 12 percent in 1999, constant thereafter
- Line 8: Decrease 3 percent in 1999, increase at 1.5 percent per year thereafter
- Line 9: Decrease 3 percent in 1999, constant thereafter
- Line 10: Increase 3 percent in 1999, constant thereafter
- Line 11: Increase in 2000 for lease payments of 6.9 Kc millions on heating plant
- Line 22: Increase at 11 percent in 1999, 3 percent per year thereafter
- Line 15: Increase of 1 percent in 1999, decrease of 2 percent per year thereafter
- Line 16: Increase of 5 percent in 1999, 1.5 percent per year thereafter

Worksheet #3 provides pro-forma estimates of recurring revenues and operating expenditures for City F from 1999 through 2009. It also includes net operating surplus and debt service coverage.

Key points to note: First, accepting the projections for the time being, it can be noted that City F projects an increasing net operating surplus that grows from 53,000Kc in 1999 to 25.6 Kc millions by 2009. This growing net operating surplus is the result of an average annual growth rate in recurring revenues of 4.3 percent per year and a slower growth rate for operating expenditures of only 1.4 percent per year. In 2009, the net operating surplus provides a debt service coverage ratio of 3.4 times.

However, City F faces a major shortfall in net operating surplus in 1999. It also faces shortfalls in 2000 and 2002, although coverage in these years is close to 1.0 times. The first hurdle for City F is to generate sufficient revenues in the next two years. The groups can discuss alternatives, which may include:

- a) Cover the shortfalls from non-recurring revenues
- b) Cut operating expenditures
- c) Cut other investment expenditures
- d) Increase recurring revenues
- e) Borrow

Strategy (a) carries some risks—what non-recurring revenues can be expected that are not already in the budget? Strategy (b) would require a cut of nearly 7 percent in operating expenditures to generate sufficient net operating surplus. Strategy (c) raises the issue of priorities—are there any projects that can be postponed? Strategy (d) can be used to highlight the difficulties that Czech municipalities have in controlling recurring revenues. Although strategy (e) does not sound feasible, we could point out that capitalizing interest for at least the first year might be an appropriate strategy here, since the project will not go on-line until 2000.

Participants that are sharp might note the ‘disconnect’ between the lease revenue for the project, and debt service—if possible, this issue would best be postponed until the end of the discussion on Worksheet #3.

The next area for discussion might be on the projections per se. There are several revenue increases projected for 1999 that need to be questioned in light of the continuing Czech recession. Personal taxes (lines 1 and 2) are projected to grow at 17 percent and 8 percent respectively—after a change of 9 percent (line 2) and minus 39 percent (line 3) in 1998. Corporate income taxes on the



other hand are projected to grow at 5 percent in 1999 after a change of 17 percent in 1998. Participants may be able to cite central government policy changes that explain these trends—otherwise, City F must provide further justification. Moreover, the projections for tax revenue increase after 1999 are a constant 7 percent growth for personal taxes and 5 percent for corporate—these can be related to participants expectations of inflation and macro growth.

Contrasting the projected growth rates in operating expenditures with tax revenues can provide an interesting discussion. Salaries (line 14) are projected to grow 11 percent in 1999 (vs. 17 percent for personal income taxes) and 3 percent thereafter (vs. 7 percent for PIT). Operating subsidies are projected to go up 1 percent in 1999 and then decrease by 2 percent per year. Other expenditures are expected to go up 5 percent in 1999 and 1.5 percent thereafter. Discussants may conclude that many of these expenses should increase at the rate of inflation, at least, unless the city has a well-defined program for controlling expenses—we may prompt a discussion of how, practically, managers can control operating expenses.

Finally, it can be noted that the lease payments are structured to amortize the non-subsidized plant cost of 63 Kc million (borrowed by the city) over 15 years. The lease payments are structured with an implicit interest rate of 7 percent—in other words, a level payment of 6.9 Kc millions over 15 years amortizes 63 Kc millions at a rate of 7 percent. In effect, City F is subsidizing the heating plant by lengthening the lease terms beyond the maturity of the debt and by charging a lower rate (7 percent) than the weighted average cost of borrowing (27 mill at 3 percent + 36 mill at 12 percent = 8.15 percent on 63 mill). We can encourage the groups to discuss this type of indirect subsidy and use the discussion to lead into other project factors.

DISCUSSION OF PROJECT ECONOMICS

Table 1
Customer Base, City F Central Heat System

Customer Base	Heat Consumption (GJ/year)	Percent of Total
Residential:		
City Owned	81,085	39
Other Residential	27,561	13
<hr/>		
Other City Owned Facilities		
Orphans Home	2,136	1

Customer Base	Heat Consumption (GJ/year)	Percent of Total
Cultural Center	3,204	2
Health Center	930	1
Kindergarten	1,056	1
Special School	1,078	1
Other City Facilities	3,637	2
Supply to Exchange Stations	15,100	9
Direct Purchasers		
Prison	51,415	25
Manufacturing Firm	4,867	2
Elementary School	10,828	5
Kindergarten	3,348	2
Total	209,456	100

Exhibit 2
Summary of Construction Costs
City F Heating Plant

Component	Cost (in Kc millions)
Heat Exchanger at the rolling mill furnaces	13.1
Pumping Stations	4.2
Pipeline (50-250 mm)	45.3
Heat Exchanges in Apartment buildings	11.2
Modifications in rolling mill at Steel, a.s.	0.4
Measurements and regulations for the construction	11.1
Electro-equipment for the whole construction	4.7
Total	90.0

The discussion on project economics will draw upon the information provided to the participants from City F. (See Attachment I: City F Narrative)

The discussion over the council's concern to hold customer charges at 300 Kc per giga joule (GJ) can be used to discuss the importance of demand factors:

- How sensitive (elastic) is demand for the heat and hot water with respect to price
- Is the price of 300 Kc /GJ 'high' in the participants' experience?
- Are there substitutes for the district facility that are economical for homeowners?



Our goal is to provoke a general discussion of these issues, and suggest to City F that there are questions to be answered. Other project questions to be raised:

- ! Is there a feasibility study that addresses the economics of the project? What alternatives were considered and what were the cost, benefits, and risks of these projects versus the proposed project?
- ! What are the risks that the project will be completed on time and within budget?
- ! Should there be a contingency amount built into the financing needs?
- ! Is there an independent consulting engineer that will monitor the project construction and initial operation?
- ! Would the groups recommend a formal contract with the Steel Company to fix the cost of heat purchased?
- ! Would the groups recommend a contract with the prison to purchase heat and hot water? What would the life of the contract be? What would the terms be? (Hell or high water, take and pay?) Fixed price or fixed share of costs? The city's interest in the operations is important because a substantial revenue stream comes from the lease payments.

ATTACHMENT I
CITY F NARRATIVE

ATTACHMENT I CITY F NARRATIVE

INTRODUCTION

You have been retained as the financial advisor to City F. The city has asked you to review the proposed plans for a reconstruction of the city heating system, and to evaluate the financial feasibility of the project. You have also been asked to assess the risks of the proposed financial arrangements. To assist you in this assignment, City F has prepared a summary of the key factors relating to the heating system project.

Project Overview

City F is planning a major replacement of the district heating system at an estimated cost of 90 Kc million. At present, the system consists of a number of independent local boilers that provide hot water and heating to its service area. These local boilers are old, and in need of repair. Moreover, hard coal, coke and brown coal fuel these boilers, which result in substantial emissions of particulate (dust), sulfur dioxide and carbon monoxide. The planned new system will provide significant reductions in these pollutants.

Under the proposed plan, the city will eliminate the local boilers by developing a system to buy heat supply from the ABC Steel Company (which is located on the edge of the city) by extracting waste heat from the steel furnaces. ABC Steel Company operates a total of 5 rolling mill furnaces that generate substantial waste heat, and two of the steel furnaces will be connected to ensure continued service in the event of outages and breaks in service for furnace maintenance. Peak energy needs will require supplemental energy from company-owned power station at the steel mills. As part of an earlier company plant-expansion program, a hot water system had been constructed from the power plant to the furnace facility. Waste heat from the mill is expected to produce about 70-80 percent of the heat required, and the remaining 20-30 percent will come from the power plant.

Heat and hot water will be distributed using an underground pipe system from the Company furnaces to City F. The pipeline will consist of 3900 m of insulated steel pipes for main distribution lines, and for branch piping to the heat exchanger stations. The Steel Company engineers have completed a technical evaluation and design. The system will be sized to provide a reserve margin of 33 percent.

Once the new heating system is in place, the existing boilers will be replaced with heat exchangers, and the old boilers will be dismantled. An estimate of the construction costs is provided in Exhibit 1. The ABC Steel

Company will construct the portions of the project that are on its property and it will bill the city for costs of approximately 18.5 Kc million. The remainder of the project has been put out for tenders, and the construction firm of E_ , s.r.o. submitted the low bid of 71.5 Kc million for the remaining construction costs. The city plans to start construction in early May and finish by December 1999, so that the new plant will be operational in January 2000.

The District Heating Company and City F

The heating plant will be owned by the city. In 1998, the city formed a joint stock company—the F District Heating Company, to manage, operate, and maintain the heating system, and to produce and market heat and hot water to the city's service area. The Joint Stock Company is 100 percent owned by the city, and the city also owns the physical plant of the heating district. Under the arrangements, the city will continue to own the heating plant, but will lease the facilities to the heating company. The lease for the new plant facilities has been structured to require annual payments of Kc 6.917 million over a 15 year period. These terms were established to amortize the new plant costs over a period more closely related to the useful life of the project, and to enable the heating company to establish initial rates for service of 300 Kc per GJ. Since the new plant will require an increase in rate to customers above the current rate of 275 Kc per GJ, the council has been adamant in keeping lease payments at the proposed level.

The initial rates of 300 Kc/GJ will enable the heating company to pay for operating costs, taxes and the lease of the facilities. Included in the operating costs is the cost of purchasing the heat supply from the ABC Steel Company. Although a contract has not been signed with the ABC Steel Company, the company has indicated that it will charge an initial rate of Kc 125 per GJ .

The Service Area

More than 72 percent of the heating system production for heat and hot water is supplied to the residential sector and to city-owned facilities, which consume 180,000 GJ per year. City F has a population of 10,000, which is expected to remain stable for the next 10 years. Table 1 provides an analysis of the overall customer base for the output from the project. The prison currently consumes about 25 percent of total heat supplied.

Financing Arrangements

Based on preliminary discussions with the State Environmental Fund, the project will be eligible for a grant of 27 Kc millions (equal to 30 percent of the construction cost), and a low-interest loan for another 30 percent of the project. This loan—27 million Kc—will have a 3 percent interest rate. The State Environmental Fund has agreed to provide a grace period until 2002 at which

time principal on the loan will be amortized through 2009. The city is now discussing with prospective lending institutions loan terms for the remaining 36 Kc million. Based on current trends, the city believes that this project would qualify for a MUFIS loan with an interest rate of 12 percent and a 10-year principal amortization schedule. Exhibit 2 provides a summary of the proposed financing arrangements for the project, and Exhibit 3 provides a detailed schedule of debt service payments based on the estimated loan terms. As Exhibit 3 demonstrates, there will be a substantial increase in debt service for this project beginning next year when debt service jumps to 8.7 Kc million. Debt service continues to increase through the year 2002, reaching a level of 11.24 Kc million. After 2002, outlays for debt service will fall each year through the final maturity date in 2009.

Additional Data Supplied by the City

You have requested information from the city to assist your analysis. Exhibit 1 provides financial information for 1996 through 1998 and a budget for 1999 without the project. The city has also supplied a budget for 1999 that includes the project and this is available in Exhibit 5. As a first step in your evaluation, you note that City F has outstanding debt, so you decide to review the city's past coverage of debt service. The summary of your analysis is provided in Worksheets 1 and 2. Finally, you ask the city to provide you with pro-forma projections of the key budget items in recurring revenues and operating expenses for the years 1999 through 2009. This data is provided in Worksheet #3.

Based on the information, you can develop a preliminary assessment of City F's ability to meet future debt service obligations for the project. You also prepare questions for City F regarding the projections of future revenue/expense items and other factors such as construction period/ project completion risks.